

CLAIMS

What is claimed is:

1. A liquid injection module for vapor liquid delivery
5 system, said liquid injection module comprising:

a liquid injector, said liquid injector is used to inject a liquid source and make said liquid source atomized;

a purging gas provider, said purging gas provider is used to provide a purging gas to purge out said liquid source that remain
10 inside said liquid injector;

a first three-way valve, said first three-way valve is used to connect said liquid source, said purging gas provider and said liquid injector; and

a exhausting branch, said exhausting branch disposes
15 adjacent said liquid injector, and said exhausting branch is used to exhaust redundant said liquid source that purged by purging gas.

2. The liquid injection module according to claim 1,
20 wherein said purging gas is selected from the group consisting of nitrogen, CO₂, Ar and He.

3. The liquid injection module according to claim 1,
further comprising a carrier gas, said carrier gas is used to carry said atomized liquid source.

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4. The liquid injection module according to claim 3,
wherein said carrier gas is TMCTS (1,3,5,7,
Tetramethylcyclotetrasiloxane) C₄H₁₆O₄Si₄.

5. The liquid injection module according to claim 1, further comprising a second three-way valve, wherein said second three-way valve connect said exhausting branch, a gas line and a delivery line, said gas line depositing between said liquid injector and said second three-way valve, and said second three-way valve is used to control flow between said exhausting branch and said liquid injector.

6. The liquid injection module according to claim 5, further comprising a carrier gas provider, said carrier gas provider is used to provide carrier gas to carry said atomized liquid source.

7. The liquid injection module according to claim 6, wherein said carrier gas is TMCTS (1,3,5,7, Tetramethylcyclotetrasiloxane) $C_4H_{16}O_4Si_4$.

8. A heating injection apparatus for vapor liquid delivery system use in chemical vapor deposition (CVD) process, said heating injection apparatus comprising:

a liquid injector, said liquid injector is used to inject a liquid source and make said liquid source atomized while said liquid source injecting;

a purging gas provider, said purging gas provider is used to provide purge gas to purge out said liquid source that remain inside said liquid injector;

a first three-way valve, said first three-way valve is used to connect said liquid source, said purging gas provider and said liquid

injector;

a exhausting branch, said exhausting branch disposes adjacent said liquid injector, and said exhausting branch is used to exhaust redundant said liquid source that purged by purging gas; and

5 a heating means for heating gases, said heating mean depositing between said liquid injector and a carrier gas provider, said carrier gas provider is used to provide carrier gas to carry said atomized liquid source.

10 9. The heating liquid injection apparatus according to claim 8, wherein said purging gas is selected from the group consisting of nitrogen, CO₂, Ar and He.

15 10. The heating liquid injection apparatus according to claim 8, wherein said heating means for heating gases is a thermostat device, and the heating source of said thermostat device is selected from the device consisting of heating coil and infrared ray.

20 11. The heating liquid injection apparatus according to claim 10, wherein said thermostat device is used to heat said carrier gas.

25 12. The heating liquid injection apparatus according to claim 8, wherein said carrier gas is TMCTS (1,3,5,7, Tetramethylcyclotetrasiloxane) C₄H₁₆O₄Si₄.

13. The heating liquid injection apparatus according to claim 8, further comprising a second three-way valve, wherein said

second three-way valve connect said exhausting branch, a gas line, a delivery line, and said gas line is a passage that deposited between said liquid injector and said second three-way valve.

5 14. A heating liquid injection apparatus for vapor liquid delivery system use in chemical vapor deposition (CVD) process, said heating injection apparatus comprising:

 a liquid injector, said liquid injector is used to inject a liquid source and make said liquid source to become atomization while said
10 liquid source injecting;

 a purging gas provider, said purging gas provider is used to provide purging gas to purge out said liquid source that remain inside said liquid injector;

 a carrier gas provider, said carrier gas provider is used to
15 provide carrier gas to carry said atomized liquid source;

 a first three-way valve, said first three-way valve is used to connect said liquid source, said purging gas provider and said liquid injector.

 a exhausting branch, said exhausting branch disposes
20 adjacent said liquid injector, and said exhausting branch is used to exhaust redundant said liquid source that been purged by purging gas to prevent polymerization around said liquid injector;

 a second three-way valve, said second three-way valve connect said exhausting branch, a gas line and a delivery line, said gas line is
25 the passage that deposited between said liquid injector and said second three-way valve, and said second three-way valve is used to control flow between said exhausting branch and said liquid injector; and

a thermostat device depositing between said liquid injector and said carrier gas provider, said thermostat device is used to heat carrier gas, and said thermostat device is selected from the device consisting of heating coil and infrared ray.

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15. The heating liquid injection apparatus according to claim 14, wherein said purging gas is selected from the group consisting of nitrogen, CO₂, Ar and He.

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16. The heating liquid injection apparatus according to claim 14, wherein said carrier gas is TMCTS (1,3,5,7, Tetramethylcyclotetrasiloxane) C₄H₁₆O₄Si₄.